The Chemical Age

A Weekly Journal Devoted to Industrial and Engineering Chemistry

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Sulphur Dioxide and Agriculture

A PARTICULARLY hearty welcome was given to Dr. G. S. Whitby by the London Section of the Society of Chemical Industry on his return to this country to take up the position lately vacated by Sir Gilbert Morgan. Dr. Whitby has an unusually wide experience of research on an astonishing range of subjects, and we do not doubt that the chemists of this country will be privileged to hear more addresses from him of the intense interest of that which he gave last month on the "Effect on Vegetation of Sulphur Dioxide."

It is a curious commentary upon the attitude to research of those who control the finances of nations, that it was not until an international dispute threatened and governments were facing the possibility of having to pay damages, that the money was forthcoming for a really comprehensive research upon the whole subject of the action of sulphur dioxide. This subject has been important ever since there was an organised chemical industry. Chemical works and coke ovens alike have been blamed for every crime in the agriculturist's calendar, and on not a few occasions have incurred considerable costs. The Alkali Inspectors have watched for the emission of minute quantities of sulphurous fumes with jealous care. The gas industry is taking steps to remove even the smallest traces of sulphur from the gas it supplies. Yet, it now appears, there has been little or no serious investigation into the real effects of these gases upon vegetation. The gas industry, to do it justice, has proceeded on the sound principle of first discovering whether, and in what proportions, SO_2 is deleterious for its particular purposes, and then finding processes for its removal down to those limits. The rest of industry appears just to have pointed the accusing finger at sulphur oxides and to have decided that they must be prevented from escaping at all costs.

No one would maintain, of course, that sulphur is a suitable element to liberate into the air in large quantities in populous districts. Nevertheless there must be a reasonable balance maintained between conditions under which sulphur oxides will be deleterious and those under which some emission can be allowed. Dr. Damon's conclusion, as given in the subsequent discussion, is that much of the agricultural damage alleged to be due to sulphur dioxide is in reality due to inefficient farming and to insufficient liming. We cannot forget, however, such occurrences as the Muese Valley disaster when the peculiar conditions of atmospheric stagnation, and of relatively high SO_2 and SO_3 emission, with low-lying fog, caused the deaths of some sixty people. In built-up areas and under somewhat similar conditions equally high local sulphur concentrations may occur at any time.

Dr. Whitby's investigation extended from 1929 to 1937. It was occasioned by a smelting works situated in Canada seven miles from the United States border, the U.S. farmers complaining that the SO_2 which drifted down the valley on the prevailing wind was an annual cause of damage to their crops, especially lucerne and barley. The chemists of the U.S. and Canadian Governments each investigated the subject and fought out their conclusions before a neutral tribunal. It was shown that the normal sulphur content of leaves can be increased four-fold without deleterious effect, unless too heavy concentrations, e.g., 5 parts per million, are given at one time. The effect on leaves is interesting as giving an integration of the whole effect during the period. Sulphur emission causes some retardation of the growth of trees, an effect that was measured by taking borings through the trees and measuring the diameter of the annual rings. A yellowness that developed on the lucerne plants was found not to be caused by sulphur dioxide but by shortage of boron in the soil. It was also interesting to observe that when barley and lucerne were tested by fumigation experiments certain conditions, such as high humidity, high soil moisture, and sunlight favoured attack, and moreover these plants were more sensitive at certain periods of the year. Barley, for example, is sensitive when the leaves have just formed, but much less so at later stages.

It would be impossible here to attempt a detailed account of the many valuable conclusions reached during this investigation. When the paper is published in full, it will without doubt be regarded as the classic investigation of this subject and will be of immense value to the chemical industry in its dealings with aggrieved agriculturalists. For this reason we trust that Dr. Whitby's duties will enable him to spare the time to write up his experiments and conclusions in some detail. One conclusion that seems to be of general validity may be drawn from this paper. It is that concentration of SO_2 is more important than annual quantity. A high local concentration for a few hours may exert a deleterious influence such as would not be found if double this weight of sulphur were emitted in four times that period. Obviously, "point sources" of SO_2 must be avoided, and we must not cease to purify from sulphur the gases from power stations and similar establishments.

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NOTES AND COMMENTS

Methane as Petrol Substitute

SINCE the outbreak of war much has been written about the possibilities of utilising producer gas and town gas as a substitute for petrol in the propulsion of motor vehicles. Methane gas is a substitute fuel which has not received as much attention, but it is now forming the subject of experiments by the Middlesex County Council. A steady surplus of over 150,000 cubic feet a day of methane gas is produced at the Council's sewage works at Mogden from sewage sludge and it is estimated that over 300,000 gallons of petrol a year would be saved if methane was used for motor vehicles. A report issued by the Council states that two compressors for storing the gas are to be purchased and it is proposed to start by equipping the vehicles of the Council's main drainage department with the necessary cylinders for carrying the gas. This would mean a saving of 200 gallons of petrol a week. " As a practical and economic proposition, sludge gas, containing 70 per cent. methane, has great advantages over town gas " states the report.

U.S. Chemical Exports

THE United States exports of chemicals and allied products to Central and South American countries and the West Indies exceeded £7,000,000 in 1938 and comprised a wide variety of products including £280,000 worth of coal-tar products, £3,600,000 of industrial chemicals and chemical specialities, £1,000,000 of pigments, paints, and varnishes, and over £200,000 of fertilisers and fertiliser materials. The chief importing countries of these products in the area concerned were: Argentina £1,000,000, Brazil £600,000, Mexico £1,100,000, Colombia £600,000, and Chile £260,000. Complete figures of the world trade in chemicals and allied products for 1938 are not available but according to preliminary official statistics the United States has continued to be the largest world importer of chemicals and allied products, followed by the United Kingdom and Germany.

Chemicals to South America

WRITING in a recent issue of the *Commerce Reports*, published by the U.S. Department of Commerce, A. H. Swift, of the Chemical Division, produces some interesting facts and figures. With the outbreak of war, he states, one of the leading problems in Latin America was the source for necessary chemicals. The Central and South American countries and the West Indies annually import about £20,000,000 worth of chemicals and allied products. During the last two or three years Germany has been a very strong factor as a supplier of chemicals to Latin-American countries. In 1938, German exports, according to official German statistics, were approximately as follows: to Brazil £1,760,000, to Argentina £1,120,000, to Mexico £800,000, to Colombia £600,000, and Chile £480,000. Pharmaceutical preparations and dyes, with smaller amounts of a few industrial chemicals, comprised the bulk of the German trade. The United Kingdom, another large supplier, furnished a considerable portion of the alkali and industrial chemical market.

Temperature Indicating Pigments

AN interesting discovery in the matter of heat indicating pigments has been announced by the I. G. Farbenindustrie, which has been granted a patent covering the preparation of pigments which give a clear and easily perceptible colour change at various temperature. The pigments are on a base of cobalt and nickel salts, in common crystals with hexamethylene tetramine. The table given in their patent provides the following information as to the formula, colour change, and temperature of change in each case.

$CoCl_2\ 2C_6H_{12}N_4\ 10H_2O$ rose to blue at 35° C.
$CoBr_2\ 2C_6H_{12}N_4\ 10H_2O$ rose to blue at 40° C.
$CoI_2\ 2C_6H_{12}N_4\ 10H_2O$ rose to green at 50° C.
$Co(CNS)_2\ 2C_6H_{12}N_4\ 10H_2O$ rose to blue at 60° C.
$CoSo_4\ C_6H_{12}N_4\ 9H_2O$ rose to violet at 60° C.
$NiBr_2\ 2C_6H_{12}N_4\ 10H_2O$ pale green to blue at 60° C.
$Co(NO_3)_2\ 2C_6H_{12}N_4\ 10H_2O$ rose to purple at 75° C.
$NiCl_2\ 2C_6H_{12}N_4\ 10H_2O$ pale green to yellow at 60° C., then yellow to violet at 110° C.

Change in coloration is due to loss of water of crystallisation, and since this occurs at a fixed temperature, the temperature indication provided by these pigments is very accurate. Once the change has taken place, the pigment can be restored to its original colour by moistening it, when it will be ready to provide a fresh indication as soon as its critical temperature is reached. The low temperature at which the change takes place renders these pigments particularly suitable for many industrial purposes. These pigments have been marketed under the name of " Thermocolors," and those which have been found most successful for industrial purposes are the first, sixth, and eighth in the list cited above.

Cast Iron Improvement

CAST iron is a most complex alloy. In view of the fact that very little was demanded of cast iron in the past, and perhaps on account of its very familiarity, the real complexity of its nature has not been appreciated. Only with the advent of high-strength cast irons and short-cycle malleable cast irons has the true nature of cast iron been

investigated. There are two distinct problems here which are unfortunately interrelated. One is to produce a cast iron in which the graphite is suitably distributed, generally as relatively fine graphite flakes. The other is to affect the matrix, essentially an iron carbon alloy, by means of alloying additions in a manner entirely analogous to the way in which alloys affect steel proper. It is not surprising that most of the alloying additions, such as chromium, manganese, and molybdenum, when used in proper proportions tend to produce a pearlitic matrix. However, most of these alloying additions likewise tend to form carbide rather than graphite, so that other alloying additions are necessary to balance this effect and prevent the alloy from forming a cementite mass rather than a grey cast iron. The best known graphitisers are silicon, nickel and copper, although calcium, aluminium, and zirconium are also of interest. Metallurgists have developed a number of master alloys, combining elements from each group. Many of these are ferro-alloys; they are already industrially successful and with the increased understanding of the exact effect of each element, alone or in combination, even more effective addition alloys are to be expected.

Egyptian Trade

THE United Kingdom remains by far the best customer of Egypt and also her leading supplier, according to the recent *Report on Economic and Commercial Conditions in Egypt*, published for the Department of Overseas Trade (H.M. Stationery Office, 2s.). U.K. took 33 per cent. (£E.9,436,000) of Egypt's exports in 1938, as compared with 32.2 per cent. (£E.12,442,000) in 1937; while imports of U.K. goods totalled £E.8,442,000 (22.9 per cent.) in 1938, as compared with £E.8,280,000 (21.8 per cent.) in 1937. In Anglo-Egyptian trade the balance was thus substantially in Egypt's favour in both years. Exports to the overseas Empire moved from 7.6 per cent. to 8 per cent., and imports from 5.3 per cent. to 6 per cent. Germany took second place in the list of both customers and suppliers. Her purchases from Egypt stood at £E.3,354,000 (11.7 per cent. in 1938, as compared with £E.3,310,000 (8.5 per cent.) in 1937, and her sales to Egypt at £E.3,735,000 (10.1 per cent.) in 1938, as against £E.4,198,000 (11 per cent.) in 1937. Imports to the U.S.A. rose slightly, while exports from Egypt to that country appreciably decreased. Exports to France, Belgium, Italy, and Japan all showed a downward trend, France taking third place instead of second, owing to a fall in her cotton purchases of some £E.500,000. The United Kingdom supplies the bulk of the caustic soda (£E.33,640 and £E.38,872) and the compounds of sodium and potassium (£E.26,257 and £E.29,529). Imports of glycerine are declining steadily due to local production, total values falling from £E.7,494 in 1937 to £E.5,381 in 1938.

Fuel Problems

New Manufactures Envisaged for Britain

AT the meeting of the Fuel Luncheon Club last week, Colonel W. A. Bristow, Vice-President of the Institute of Fuel, was elected President of the Club. His address was of outstanding importance and surveyed some of the urgent fuel problems of the day. We are beginning, he said, to realise how much better off we should be if we had applied ourselves in peace time to the manufacture in this country of some of the materials which play such an important part in our fuel and heavy industries. Dealing with the problem of oil, he noted one effect of the war, which was to raise the question of the right policy in peace time—whether to import crude and refine here, or import the finished products. The problem was twofold: oil production was one aspect, and the other the necessity of reducing the unfavourable balance of trade in peace time and giving employment, and of safeguarding sterling as much as possible in war. In 1938, our oil imports were divided roughly as to 80 per cent. refined products and 20 per cent. crude, the values being 2.2 pence and 3.7 pence per gallon respectively. Of these imports only 8 per cent. in value came from Empire countries.

Carbide and Ferrosilicon

Other essential products not manufactured in this country included calcium carbide, of which about 65,000 tons were imported in 1938 (mainly from Norway), and ferrosilicon, an essential raw material for the steel industry, of which 23,800 tons were imported from Sweden in 1937. The establishment of the carbide industry here, important in itself, would stimulate other industries, e.g., the production of cyanamide which is made by combining carbide with nitrogen at high temperatures. Cyanamide is not only a high grade fertiliser, but is also in turn a raw material for ammonia, nitric acid, and ammonium nitrate, the latter being required both as a fertiliser and for the explosives industry. In addition, there is the very important group of chemical industries based upon acetylene. One of the most important derivatives is acetaldehyde which can be converted quite easily into alcohol, acetic acid, acetone and rubber. These compounds are also a raw material for several varieties of plastics, and for special varnishes of industrial importance. The manufacture of carbide and ferrosilicon can be carried out in the same plant for an addition of only 30 per cent. on the capital cost, most of the plant being equally suitable for both products.

Synthesis of Hydrocarbons

Another and more important branch of the fuel industry which Colonel Bristow said we might have attacked on a large scale is that known by the generic term synthesis. Efforts were made in this country to enlist Government support for a full scale trial of the Fischer-Tropsch process, but without success. By this process hydrocarbons are produced by the synthesis of hydrogen and carbon monoxide, and the whole of the original coal is converted, after being coked, into liquid fuels and valuable gases. Germany produces today at the rate of 500,000 tons per annum of petrol, Diesel oil, and paraffins by this process, and consumes the equivalent of about $2\frac{3}{8}$ million tons of coke. The Germans have two main objects in view in the development of this work, firstly the production of a very high grade Diesel oil with a cetene number of 120, or of a low octane petrol which can be improved by other means, and secondly the establishment of a new industry utilising the aliphatic compounds. For example, the fractions rich in olefines are already used for the manufacture of lubricating oil whilst the paraffins are oxidised into fatty acids which are used in the manufacture of soaps or converted into glycerine. Remembering that nitric acid is being made by the combustion of ammonia produced from coke oven or water gas, it can be seen that nitroglycerine can now be produced from coal alone as is also the case with ammonium nitrate and trinitrotoluol. Moreover the work now being carried out on these lines will lead to new developments of the most remarkable character, offering immense possibilities to the coal industry. For example,

during the past few years the production of high octane petrol by polymerisation has become vitally important.

It is not too much to say that, other things being equal in rival air forces, the power of attack and defence will depend upon the unstinted supply of high octane petrol. It is certain that within limits not yet reached the performance in respect to speed, rate of climb, military load and striking range is increased in a remarkable degree as petrol of higher octane number is made available. These facts are, of course, common knowledge, but what is not so generally known is that these high octane petrols can be produced from coal via synthetic processes. Even to-day the Fischer process can be carried out in such a manner as to produce large quantities of mono-olefines. It will be merely a question of time and research to produce, by gas synthesis, gases rich enough in olefines to be polymerised into petrol. Another revolution will be accomplished if the conversion of methane itself and its homologues into olefines can be carried out commercially. This is a problem of great importance both for the oil and the coal industries. For the oil industry because of the immense quantities of methane contained in natural gas, for the coal industry because of the high percentage of methane in the gases from carbonisation.

"Much of the work I have described," Colonel Bristow concluded, "has been carried out in Germany to prepare for war. Is it too much to ask that in this country we should show similar commercial courage and resolution in order to prepare for peace? I suggest that it is essential that at the end of this war the national effort directed by the Government shall continue unabated in order that we may be as victorious in peace as in war, and that we plan finance and commence that great effort now."

Export and Import Regulations

Canadian Prohibitions

EXCEPT under permit from the Minister of National Revenue, exportation of the following articles from Canada is prohibited: asbestos, including asbestos sand and waste; bauxite, alumina and aluminium; cadmium; cobalt, in ore, refined; salts and stellite; copper, in ore, concentrates and refined; ferro-manganese; ferrosilicon; lead, in ore, concentrates and refined; nickel, in ore, matte and refined; nickel oxide; zinc in ore, concentrates and refined; scrap metals of all kinds.

Exports from Italy

Export of the following chemicals from Italy is prohibited except under licence: Liquid chlorine, bromine, iodine, phosphorus, white, yellow and red, also sulphides of phosphorus, hydrochloric, nitric and sulphuric acid, caustic potash, caustic soda, ammonia, concentrated ammoniacal waters coming from the distillation of coal, for the manufacture of gas, carbonates of potassium and of sodium, vegetable ash, beetroot saline, chlorides of calcium (hypochlorite), chlorates and perchlorates, nitrates of ammonium, of potassium and of sodium refined, carbide of calcium, chemical fertilisers, fatty acids, glycerine, acetone, pyrolignite of calcium (impure acetate of lime) and calcium citrate.

Goods from Belgium now subject to export licence requirements include sulphide of antimony, and chromate and bichromate of potash and of soda.

Turkish Import Quota

United Kingdom exporters of goods sold to Turkish buyers for payment through the Anglo-Turkish Clearing other than those for which payment is received on a "compensation" basis, are reminded, by a notice in the *Board of Trade Journal* for October 26, to satisfy themselves before shipment that a sufficient portion of the quota remains unused to permit the clearance of the goods through the Turkish Customs. If the available balance is small, it may be exhausted by other consignments already on their way to Turkey; and, since goods normally take several weeks to arrive in Turkey from the United Kingdom, such consignments may be large in the aggregate. Chemical articles subject to quota include artificial organic colours (obtained with coal tar oil), anilines, alizarines, artificial indigoes and natural indigoes refined, sodium and its salts, copper salts, and creosote and its salts; also included are mineral fuel and mineral oils (petroleum, schist oil, lignite oil and other mineral oils).

A note in the same issue of the *Board of Trade Journal* explains that ores in general, except tin ore, should be added to the list of goods the exports of which from Turkey is subject to licence.

CONTROL OF NON-FERROUS METALS AMENDED

IN pursuance of Regulations 55 and 98 of the Defence Regulation, 1939, the Minister of Supply has issued the Control of Non-Ferrous Metals (No. 4) Order, 1939, dated October 23, 1939.

This Order amends the schedule of maximum prices attached to the Non-Ferrous Metals (No. 2) Order, 1939, (i) by removing therefrom the following materials: *viz.*, zinc sulphide, lithopone, and zinc dust; (ii) by increasing the maximum prices for zinc oxide (Red Seal quality), zinc sheets and zinc boiler plates—and adjusting the price of hard spelter and dross for delivery on an "ex works" basis; and (iii) by fixing for the first time maximum prices for various forms of non-ferrous scrap. As regards zinc sulphide and lithopone, arrangements are being made with the trade for the regulation of the prices of these materials on a voluntary basis. The Order also removes the necessity for sellers or purchasers of zinc oxide, zinc carbonate or zinc dust to obtain licences under Article 2 of the Non-Ferrous Metals (No. 3) Order, 1939.

"THE CHEMICAL AGE" ABROAD

Many people have been in the habit after reading their newspapers, of posting them to friends and relatives abroad, or of buying copies specially for that purpose. Under the censorship regulations, it is no longer possible to allow private individuals to post newspapers and periodicals to any of the countries on what is known as the censorable list, which includes all neutral countries in Europe and Asia and their dependencies. The reason for the prohibition is that printed matter affords easy opportunities of conveying information to enemy agents. But there is no reason why you should stop sending British newspapers, and therefore the British point of view, to your friends abroad. All you have to do is to place a regular order direct with us or with a subscription house possessing an export permit. The newspapers will then be despatched on your behalf quicker than you yourself could send them off in peace time. If you want to know which the censorable countries are, ask us.

EMERGENCY ADDRESSES

CHARLES PAGE AND CO., LTD., 52 Grosvenor Gardens, London, S.W.1, are now at "Latchetts," Church Road, Burgess Hill, Sussex.

DANIEL C. GRIFFITH AND CO., 8 Victoria Avenue, London, E.C.2, have an emergency address at "Harford," Old Tiverton Road, Exeter (telephone: Exeter 55011).

The war-time address of the INSTITUTE OF PETROLEUM is c/o Department of Engineering and Refining, The University, Edgbaston, Birmingham, 15.

The offices of THE JOURNAL OF SCIENTIFIC INSTRUMENTS have been moved to the emergency address of the Institute of Physics, Reading University, Berks.

BRICK RETORTS

A setting of six low temperature retorts on the system described in Technical Paper No. 50 (Fuel Research) of the Department of Scientific and Industrial Research, and commented on in our last issue, is illustrated herewith. The general arrangement allows of a large bunker standing above the retorts, and filled by means of an elevator from the railway siding below. The retorts are fired by their own gas, supplied under pressure from a gasholder. The air supply is by fan under pressure. The discharge doors at the bottom of the retorts are at a convenient height for discharging into skips in which the coke is conveyed to store or filled into railway wagons. The setting is built in the open without any covering. It is well insulated and faced with red stock brick. The design has been arranged so that any of the three pairs of retorts can be controlled as a unit to carbonise at some pre-determined rate, or can be isolated completely if necessary. The retorts are heated by twelve heating walls, two for each retort, each wall consisting of eleven horizontal passes. The gas required to heat each wall is admitted into the top pass, through the special burner designed to burn coal gas with a non-luminous flame. To maintain the required temperature the air supply to the various passes is controlled, the number of passes into which air is admitted being decided by the rate at which coal is being carbonised.

The plant has worked very satisfactorily, and no major difficulty has arisen. It has been possible to carbonise up to 8 tons of coal per retort per day and to produce an excellent smokeless fuel.

[By permission of the Controller, H.M. Stationery Office

Setting of Six Retorts of Fuel Research Station Design, erected at a chemical factory in South Yorkshire

Chemical Matters in Parliament

Iron-from-Coal Plants

In the House of Commons, Mr. G. Hall asked the Secretary for Mines whether he would give the number of oil-from-coal plants of all processes now in production in this country and the estimated annual production from these plants.

Mr. Lloyd, for the first part of the question, referred the hon. Member to the reply which he gave on August 4 to the hon. Member for Leigh (Mr. Tinker). The yield of refined motor spirit from coal in 1938 was 1.3 million gallons by low temperature carbonisation, 42.3 million gallons by hydrogenation, and 54.7 million gallons at coke ovens, gasworks and tar distilleries.

Benzol Rationing

Mr. Denville asked the Secretary for Mines, as a concession to motorists, industrial and otherwise, whether he would permit the free use of benzol, of which there is an abundant supply which the Government do not require.

Mr. Lloyd answered that motor benzol formed a useful contribution to our supplies of high grade motor spirit, but there did not appear to be any reason why its use should be exempted from the operation of the rationing scheme.

Mr. Denville: Will my hon. Friend consult with the gas companies as to the contribution they can make?

Mr. Lloyd: I am prepared to do that.

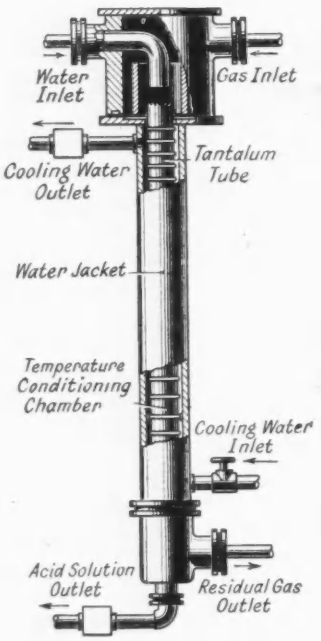
GERMAN PATENTS

Mr. R. J. Gordon, City Librarian of Leeds, in a letter to *The Times*, calls attention to the Board of Trade regulations under which enemy patents can be taken over and worked in this country. He notes that the only set of German patent specifications believed to be available to the public in the North of England is that possessed by the Commercial and Technical Department of the Leeds Public Libraries. He further states that he has been authorised by the chairman of his committee to announce that consideration will be given to applications for the loan of these specifications, if such applications are submitted through the librarians of the local public libraries to the City Librarian, Central Library, Leeds, 1. There will be no charge for this service except the cost of postage.

Absorption Chambers for HCl

Use of Tantalum in France

CONSIDERABLE interest is being shown in France in the possibility of the use of tantalum for the construction of absorption chambers for gaseous hydrochloric acid. Formerly, solution of the gas in water has taken place in ceramic towers, but the poor heat conductivity of ceramic materals renders the problem of cooling the solution to permit suitable concentrations difficult. The use of tantalum, however, permits an interesting solution of the problem.



The new apparatus comprises a thin-walled tantalum tube fitted inside a larger tube of steel or other suitable material, and leaving space between the two tubes for the creation of a water-jacket. Baffle-plates around the tantalum tube force the water to circulate in this jacket in a rising spiral, the cooling water being introduced at the bottom of the tube, and evacuated at the top. The water in which the gas is to be dissolved is introduced at the top of the tantalum tube, and made to flow in a thin layer down the inner surface of the tube. The cooling water around the lower end of the tube is reached, on account of the countercurrent of cooling water. The gaseous HCl is introduced at the top of the tantalum tube, and flows through it slowly from top to bottom, dissolving in the layer of water on the sides of the tube, and increasing in concentration as the bottom of the apparatus is reached. Two outlets are provided at the bottom, one for the acid solution (which can be obtained at concentration up to about 22° Bé.) and the other for any residual HCl gas, which can be passed back through the apparatus along with fresh gas. Concentration of the solution obtained can be regulated by simple regulation of the input temperature of the cooling water, the concentration attained corresponding to the solubility of the gas at the temperature of the cooling water supplied to the apparatus.

Although this system is extremely simple and effective, it has a drawback to general application, in that tantalum is not obtainable everywhere. Only two workable deposits of this metal are known, one in the Piebarra Desert in Australia and the other in the Black Hills of South Dakota. Moreover, even in these ores it is extremely rare, running about six to seven ounces of metal to the ton of ore. In its favour, however, is the fact that it is practically unattackable by acids, even concentrated, at temperatures up to about 150° to 175° C. Its heat conductivity, approximately equivalent to that of steel, makes it easy to keep the apparatus cool during dissolution of the gaseous HCl, so that an apparatus with a tantalum tube about 18 cm. in dameter and two metres long can provide an absorption capacity of about 1½ tons of gas per hour in continuous operation.

GERMAN exports of ammonium carbonate, according to official statistics, declined from 1,659 metric tons in 1937 to 1,125 tons in 1938. India was the largest market, taking 149 tons, while the second largest was the U.S.A. taking 95 tons.

Swedish Petrol Substitutes

Terpene and Acetone Bases

THE expected interruption in regular supplies of liquid fuel in Sweden has now been a fact for about six weeks, and the search for substitute motor fuel has been intensified. The public interest at the moment is centred on gas generators, probably because the use of a cheap substitute, charcoal, looks more attractive than most other emergency schemes. Objections to most other substitutes can be advanced as long as petrol can be obtained in normal quantities and at tolerably normal prices, the question of production costs being a dominant factor. In this respect, as well as with regard to available volume, charcoal certainly surpasses all rivals. It can be produced from forest waste by means of portable charcoal retorts that can be moved from place to place as the waste is converted, and in many cases such retorts may be combined with mobile briquetting plant. The wood distillation scheme comes second in the opinion of many fuel experts. A strong supporter of schemes in this direction writes in a recent issue of the *Göteborg Handels och Sjöfartstidning*: "The Swedish forests could easily produce as much liquid fuel as the country requires at present if the matter were properly taken in hand. Retaining our present export trade in timber and other wood-products we have a reserve of at least twenty million cubic metres of waste wood annually that could be converted into liquid fuel." On the subject of processes and products the writer makes the following statements: "After the nature of the raw material has been ascertained it remains to consider which chemical substances the waste wood should yield in order to supply substitutes for petrol. The answer to this question depends on the processes the wood is to undergo. Economically it would seem most advantageous in this case to use distillation after extraction, and finally hydration of wood gas and charcoal. Wood extraction and distillation are fairly simple operations of which experience is available in this country, and the processes need only be adapted to obtain a maximum quantity of fluids suitable for motor fuel, and not at present to produce as much charcoal as possible. The hydration would be carried out not in expensive and sensitive high-pressure plants of the Bergius type, but rather according to Fischer's and Tropsch's low-pressure methods.

Of all the products recovered through extractions and distillation of wood, those best adapted to serve as substitutes for petrol are terpenes, methyl alcohol and acetone. They could form the base of two kinds of fuel, one with terpenes as the main component and one in which acetone prevailed. Though a home-produced Swedish motor fuel obtained in this way could hardly be of a uniform type, like petrol, this is not of outstanding importance, because by mixing different kinds of liquid fuel it should be quite possible to obtain compounds superior to petrol as motor fuel. The properties of such heterogeneously composed fuels complement each other when the product is used for power development in an internal combustion engine, making it run more efficiently and reliably. Analogous methods, e.g., the mixture of various foreign components such as benzole spirit, an ethyl radical, etc., are, of course, practised even now with a view to making petrol more suitable for certain duties." The writer admits in conclusion that many technical difficulties will be met with before production on the large scale required can be started, but he maintains that these are not insuperable.

ACCORDING to a report from the U.S. Commercial Attaché at Tokyo, published by the American Department of Commerce (Bureau of Foreign and Domestic Commerce), scarcity of coal and a prolonged drought, by curtailing the normal operations of hydro-electric power stations, resulted in a serious shortage of electric power in Japan during July and August. The power shortage became so acute that many industrial concerns were unable to maintain production. The electro-chemical industry in particular suffered from the shortage, and grave official concern is reported to be concerned over the reduced production of ammonium sulphate, calcium cyanamide, and calcium carbide.

PERSONAL NOTES

DR. HAROLD HARTLEY, head of the research department of Radiation, Ltd., has been appointed a technical director of the company.

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MR. N. J. L. MEGSON, M.Sc., A.I.C., of the Chemical Research Laboratory, Teddington, was recently appointed plastics adviser to the Ministry of Supply.

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DR. J. H. PATERSON, F.I.C., who has resigned from the managing directorship of Murex Welding Processes, Ltd., has been appointed managing director of the Arc Manufacturing Co., Ltd.

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MR. E. W. GOODALE has resigned his post as Controller of Silk and Rayon and the Minister of Supply has appointed Mr. H. O. Hambledon, a member of the Council of the Rayon and Silk Association, in his place.

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THE Dunlop Rubber Company have lent the services of their Controller of Finance, MR. F. R. M. DE PAULA, O.B.E., to the War Office where he is acting as Deputy Director-General of Progress and Statistics.

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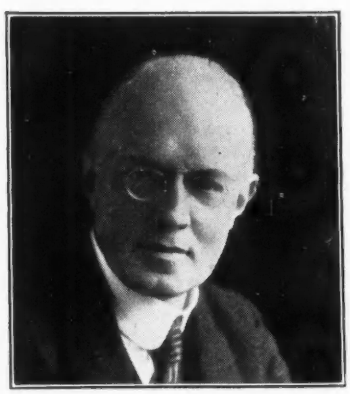
MR. A. E. COULTHURST, general sales manager and advertising manager of Parkinsons, Ltd., manufacturing chemists, Burnley, was made a presentation last week by members of the staff of Parkinsons, Ltd., on the occasion of his departure to take up an appointment as general manager for Australia and New Zealand for Fassett and Johnson, Ltd., distributors of many famous proprietary medicines.

OBITUARY

PROFESSOR RICHARD VERNON WHEELER, Professor of Fuel Technology at Sheffield University since 1921 and Director of the Sheffield and Buxton stations of the Safety in Mines Research Board, died at Sheffield on October 28, aged 56.

Professor Wheeler spent three years in post-graduate research work in collaboration with Professor W. A. Bone on the combustion of hydro-carbons and surface combustion and was subsequently appointed fuel chemist and afterwards gas plant manager to the firm of Monks, Hall and Co., Warrington. He was later chemist to the British Coal Dust Experiments Committee, Mining Association of Great Britain, chief chemist to the Explosions in Mines Committee, Home Office, and testing officer, Mines Department, Board of Trade. From 1924 to 1929 he served on the Fuel Research Board and from 1929 to 1930 on the Gas Poisoning Committee of the Board of Trade.

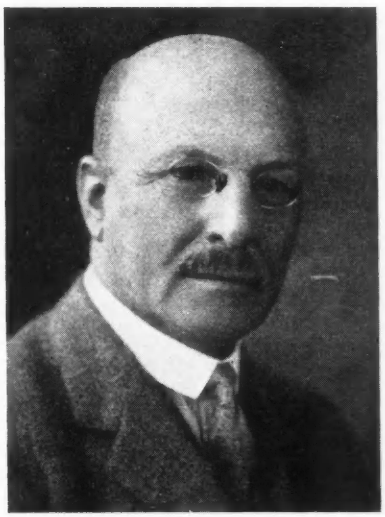


Professor R. V. Wheeler.

Professor Wheeler, who was D.Sc. (Manchester), F.G.S., F.I.C. and F.C.S., won a world wide reputation by his many contributions towards safety in coal mines. In recognition of his work he was awarded the Melchett Medal by the Institute of Fuel in 1938 and the Medal of the Institution of Mining Engineers in the same year.

SIR JOSEPH TURNER, for many years a prominent figure in the chemical and dyestuffs industry, died last week at his home in Huddersfield, aged 72.

Sir Joseph Turner began his career as a laboratory boy in the works of Read, Holliday and Sons, Ltd., dyestuffs and chemical manufacturers, Huddersfield. He gained promotion to the post of head chemist and finally became chairman of the company. He and his brother, Mr. James Turner, took out Holliday's first patent in connection with sulphur colours, in 1895, and, with Mr. Harry Dean, the brothers took out the firm's first patent dealing with the manufacture of fast chrome blacks. In 1915 the firm became British Dyes, Ltd., with Sir Joseph as manager and director. In 1918 the firm became the British Dyestuffs Corporation, Ltd., with Sir Joseph as managing director. Later he established the concern which now bears his name—Sir Joseph Turner and Son, dyestuffs and chemicals, Huddersfield. Sir Joseph was one of the British delegation of technical advisers to the Peace Congress at Versailles.



Sir Joseph Turner.

TWENTY YEARS AGO

A PLEA by an Admiralty chemist for a more uniform procedure in oil analysis was the subject of sympathetic comment by THE CHEMICAL AGE in its issue of November 1, 1919.

"It is an easy matter to talk about the standardisation of analyses," THE CHEMICAL AGE stated, "and with many substances such methods of testing present no great practical difficulties. When, however, one considers the decidedly complex subject of oil in all its varieties the problem of agreeing on a model scheme is by no means simple. The multiplicity of methods and apparatus at present in use certainly makes comparison a little indefinite, so that tests upon the same subject by different analysts are rarely in agreement. There can be no question that with oil analysis there is every tendency for personal errors to occur. . . . Such a state of affairs is, to say the least of it, exasperating. . . . Much as reform is needed, it seems to us that while it might be as well to set up a Standardisation Committee in this country for the purpose of examining all methods at present used, the chief stumbling-block is the fact that we are certainly not a petroleum-producing country of any very great importance."

General News——From Week to Week

CONSIDERABLE damage was done when an outbreak of fire involved the premises of Tom Liversedge and Sons, Ltd., dyers and cotton merchants, Huddersfield, early on Sunday morning. The fire lasted over seven hours.

THE FOLLOWING products have been added to the schedule of goods affected by the Export of Goods (Prohibition) (No. 2) Order, 1939: Nickel oxide, nickel sulphate and nickel ammonium sulphate, selenium and selenium compounds.

ACCORDING to present arrangements the anniversary meeting of the Mineralogical Society on Thursday, November 9, 1939, will be held in the Apartments of the Geological Society, Burlington House, Piccadilly, London, W.1, at 3.30 p.m. The Council will meet at 2.45 p.m. on the same day.

FOUR MEN employed by the Pumpherston Oil Company were injured in an explosion in a wash house at Livingstone Station, West Lothian, which had been converted into a plumber's shop, on October 18. It is believed that the explosion occurred through the ignition of an oil drum. The men sustained severe shock and their condition is regarded as serious.

INVESTIGATIONS are being conducted into the possibilities of utilising the silver grey sand waste from china clay in the manufacture of concrete air-raid shelters. A plentiful supply of this waste is available in the St. Austell district where it has been used extensively for filling sandbags. The commercial application of the waste is still the subject of experiment and it is understood that the Home Office is interested in the project.

A BLACK SUBSTANCE which has accumulated in an area of ground at Holytown Colliery, New Stevenston, for many years, has been found by people of the district to be an excellent burning material. The substance is a mixture of coal dust and coal gum from the washing plant at the colliery. It was always regarded as waste, but its accumulation has allowed it to become caked, and square blocks in the form of briquettes can easily be made.

AN INTERESTING and instructive series of lantern slides, describing a wide range of repairs to motor vehicle engines, industrial machines, machine tools, and other damaged parts, has been prepared by Barimar, Ltd., the welding engineers. The slides, along with full text of lecture, will be lent free of charge to technical schools, institutes, and engineering societies, and applications, with suggested dates, should be sent to Barimar, Ltd., 14/18 Lamb's Conduit Street, London, W.C.1.

ACCORDING TO AN ORDER made by the Minister of Supply, the provisions in the Control of Molasses and Industrial Alcohol (No. 2) Order regarding the maximum price of molasses will not apply to molasses of high grade which has been imported into the United Kingdom in packages the capacity of each of which does not exceed 10 cwts., and which has received the approval of the Minister of Supply in writing as complying with this description. The amending Order is known as the Control of Molasses and Industrial Alcohol (No. 4) Order, 1939.

ENDEAVOURS are being made to keep alive the Manchester section of the Oil and Colour Chemists' Association during the war period. The committee has decided to organise a limited programme of meetings to be held on Saturdays, and by including lunch or tea, give members the opportunity of maintaining friendly contacts. Mr. R. Fulton, secretary, has addressed a communication to members asking them whether they prefer meetings to be held on Saturday morning followed by lunch, or on Saturday afternoon followed by tea. Later in the season, the holding of restricted social events may become possible.

THE MANUFACTURE of paper from oat-straw has been introduced by Thomas Tait and Sons, Ltd., Inverurie Paper Mills, in an attempt to offset the anticipated difficulty in obtaining large supplies of esparto grass in wartime. The company have purchased additional machinery and are following a precedent established during the last war, when the mill successfully used oat-straw in paper production. It is claimed that the quality of the finished paper is equal to that made from esparto grass. The measure has been taken only to ensure sufficient supplies to carry on the work of the mill, and it will depend purely on the matter of cost whether this method of manufacture is continued should supplies of esparto grass become plentiful.

WAGE INCREASES for St. Helens glass workers were announced recently by the Plate and Sheet Glass Industrial Council.

ACCORDING to the Board of Trade returns for the month ended September 30, 1939, imports of chemicals, drugs, dyes and colours into the United Kingdom were valued at £858,433, a decrease of £311,709 compared with September, 1938. Exports were valued at £1,172,064, a decrease of £554,410. Re-exports were valued at £20,604.

A BUILDING in the rubber-proofing works of Frank Walters and Co., Miles Platting, Manchester, was destroyed by fire last week. Quantities of spirits and other inflammable chemicals caught fire and necessitated the use of foam extinguishers, while carbon bisulphide used in a rubber-curing process gave off fumes, which added to the difficulties under which the firemen worked.

THE JOINT COMMITTEE ON VITREOUS ENAMELLING (Institute of Vitreous Enamellers and British Cast Iron Research Association) announce that during the present emergency *Enamelling Abstracts* will be issued as a quarterly publication, in the interests of economy, instead of in alternate months as was originally planned. There will be at present no diminution in the volume of abstracts or in the extent of the field covered.

MR. WILLIAM MAIR, F.R.S.E., F.C.S., gave a lecture on "Recent Progress in British Chemical Industry" at the inaugural meeting of the 119th winter session of the Royal Scottish Society of Arts, held in Edinburgh on Monday. He referred to recent notable discoveries made at the laboratories of Scottish Dyes, Ltd., and described new key industries of national importance, including the production of alcohol from molasses for motor spirit and for producing acetone; the hydrogenation or hardening of edible fats and oils for the manufacture of margarine; and the hydrogenation of coal to produce petrol.

IN VIEW of present conditions, the general discussion on "The Properties and Testing of Heat Insulating Materials," which was to have taken place on November 23, under the auspices of the Joint Committee on Materials and Their Testing in conjunction with the Institution of Gas Engineers has been postponed. It is hoped, however, to revive the discussion when more favourable circumstances prevail. The Institution of Mechanical Engineers, which provides office accommodation for the Joint Committee, has removed temporarily to The Meadows, Betchworth, Surrey (telephone · Betchworth 63), where the secretary is available during the day.

Foreign News

SWEDISH aluminium sulphate exports were 7,734 metric tons for the first half of 1939 against 5,131 metric tons during the same period in 1938.

POTASH PRODUCERS in Palestine are to considerably increase their output, in order to supply countries formerly supplied by Germany. All quota agreements among potash-producing firms in Palestine were cancelled on the outbreak of war.

IMPORTS of chemicals and allied products into Sweden, with a few exceptions, showed substantial increases during the first half of 1939, according to preliminary trade statistics. Current consumption is understood to be expanding, but a large part of the increase in certain basic chemicals is the result of the Government policy to establish reserves of products, imports of which might be shut off in case of war. Thus, it is reported, the Government either directly or through the agency or principal consumers has purchased reserve supplies of Chile nitrates, carbolic acid, salt cake, soda ash, aniline dyes, and a few others. Considerable secrecy surrounds these purchases, however, since the Government is anxious to avoid influencing market conditions and not to interfere with routine imports for normal consumption. Among the commodities in which rather appreciable increases were made in imports the first half of the current year compared with the first half of last year were carbolic acid, sulphur, caustic potash, caustic soda, ammonium sulphate, potassium chloride, sodium carbonate, aniline dyes, white pigments, lacquers and varnishes, Chilean nitrate, calcium nitrate, soap, and polishes. Annual imports into Sweden of chemicals and allied products exceed in value £8,000,000.

Inventions in the Chemical Industry

The following information is prepared from the Official Patents Journal. Printed copies of Specifications accepted may be obtained from the Patent Office, 25 Southampton Buildings, London, W.C.2, at 1s. each. The numbers given under "Applications for Patents" are for reference in all correspondence up to the acceptance of the Complete Specification.

Applications for Patents

MANUFACTURE OF THIOCYANO-ALKOXY-ALKYL ETHERS OF PHENOLS. A. Abbey (Dow Chemical Co.). 27300.

INSECTICIDAL SPRAY COMPOSITIONS.—A. Abbey (Dow Chemical Co.). 27409.

MANUFACTURE OF THIOCYANO-ALKYL ETHERS of substituted phenols.—A. Abbey (Dow Chemical Co.). 27410.

PURIFICATION OF RESINOUS RUBBER TRANSFORMATION PRODUCTS.—Albert Products, Ltd. (Dr. K. Albert Ges. Chemische Fabriken). 27276.

PROCESS FOR THE PREPARATION of stable albuminous froths.—M. Bienenstock (Sagi and Pless). 27499.

APPARATUS FOR CARRYING OUT CATALYTIC REACTIONS ON FLUIDS.—C. Pleydell-Bouverie and O. D. Lucas. 27390.

MANUFACTURE OF THERAPEUTIC SUBSTANCES.—British Colloids, Ltd., J. I. M. Jones, and I. E. Balaban. 27503.

MANUFACTURE OF HETEROCYCLIC BASES.—Distillers Co., Ltd., H. M. Stanley and J. E. Youell. 27355.

PRODUCTION OF PROTECTIVE COATINGS upon magnesium and for its alloys.—Dow Chemical Co. (United States, Dec. 2, '38.) 27411.

PRODUCTION OF ETHERS OF DIMETHYLOLUREA.—E. I. du Pont de Nemours and Co. (United States, Oct. 5, '38.) 27250.

TREATMENT OF ARTIFICIAL FIBRES, ETC.—E. I. du Pont de Nemours and Co. (United States, Oct. 5, '38.) 27251.

PROCESS FOR THE PRODUCTION OF HEPTENE.—Gas Light and Coke Co. and R. H. Griffith. 27437.

PRODUCTION OF TOLUENE.—Gas Light and Coke Co. and R. H. Griffith. 27438.

PROCESS FOR THE MANUFACTURE of lower carboxylic acid esters of dl-tocopherols.—F. Hoffmann-La Roche and Co. A.-G. (Germany, Oct. 31, '38.) 27379.

MANUFACTURE OF SURFACE ACTIVE COMPOUNDS.—Imperial Chemical Industries, Ltd. (Du Pont de Nemours and Co.). 27360.

PROCESS FOR THE MANUFACTURE of polymeric materials.—Imperial Chemical Industries, Ltd. (Du Pont de Nemours and Co.) 27361.

MANUFACTURE OF PRODUCER GAS.—W. I. Jones, D. C. R. Jones, and Powell Duffryn Associated Collieries, Ltd. 27295.

APPARATUS FOR CLEANSING or filtering gases.—Koela Producer Gas Plant Co., Ltd., and O. Gatty. 27282, 27283.

PROCESS FOR DYEING OBJECTS formed of or containing vinyl resins.—P. May (Soc. Rhodiaceta). 27598.

PROCESS FOR THE PRODUCTION of aliphatic dicarboxylic acids.—N. V. de Bataafsche Petroleum Maatschappij. (United States, Oct. 8, '38.) 27246.

PROCESS AND APPARATUS for treating hydrocarbons in the liquid phase with metal halides.—N. V. de Bataafsche Petroleum Maatschappij. (Holland, Oct. 21, '38.) 27511.

REFINING AND CONCENTRATING of vitaminiferous substances.—National Oil Products Co. (United States, Nov. 30, '38.) 27339.

METHOD AND APPARATUS for treating gases.—Pittsburgh Research Corporation. (United States, July 31.) 27356.

MANUFACTURE OF ETHER SOAP.—C. T. Pollard and M. J. L. B. Pollard. 27647.

TREATMENT OF OIL to increase its capacity for carrying solid particles disposed therein.—A. Roberts. 27244.

CATAMENIAL APPLIANCES.—Robinson and Sons, Ltd., and C. G. Gillibrand. 27445, 27446.

POLYMERISABLE COMPOUNDS.—Rohm and Haas Co. (United States, Oct. 3, '38.) 27366.

BATH-PRESSES FOR THE SODIC TREATMENT OF CELLULOSE for artificial textile filaments.—Snia-Viscosa. (Italy, Oct. 6, '38.) 27688.

PROCESS FOR THE PRODUCTION of saturated hydrocarbons.—Standard Oil Development Co. (United States, Nov. 28, '38.) 27398.

MANUFACTURE OF SATURATED HYDROCARBONS.—Standard Oil Development Co. (United States, Nov. 5, '38.) 27657.

PRODUCER-GAS PURIFIER.—A. Taub, D. B. Browne, and L. W. Budds. 27555.

PROCESS AND PLANT for manufacturing fuming sulphonic acid.—Techno-Chimie and F. S. Serra. (France, Oct. 10, '38.) 27611.

MANUFACTURE OF PHARMACEUTICAL PRODUCTS.—B. P. H. Wiesner and E Katscher. 27605.

Complete Specifications Open to Public Inspection

CHEMICAL MANUFACTURE.—Mathieson Alkali Works. March 24, 1938. 9250-1/39.

PRODUCTION OF BERYLLIUM ALLOYS.—Heraeus-Vacuumschmelze A.-G. March 25, 1938. 9313/39.

PROCESSES FOR THE TREATMENT of siliceous iron-containing materials.—C. Schunck. March 25, 1938. 9435/39.

WORKING-UP OF RUBBER-LIKE SULPHUR-CONTAINING ORGANIC CONDENSATION PRODUCTS.—Silesia, Verein Chemischer Fabrieken. March 31, 1938. 8848/39.

POLYMERISATION PRODUCTS.—Wingfoot Corporation. March 31, 1938. 37264/38.

PROCESS OF MANUFACTURING SUGAR and new molasses from saccharriferous plants.—G. Lambinon. March 31, 1938. 37787/38.

SEPARATION OF MIXTURES of olefines and paraffins.—Usines de Melle. March 25, 1938. 4970/39.

PROCESS OF REFINING VEGETABLE OR ANIMAL OIL.—Anderson, Clayton, and Co. March 28, 1938. 7792/39.

MANUFACTURE OF D,L-TOCOPHEROLS.—F. Hoffman-La Roche and Co., A.-G. March 31, 1938. 8628/39.

PROCESS FOR THE PRODUCTION OF BLACK-BLUE LACQUER DYESTUFFS. I. G. Farbenindustrie. March 3, 1938. 8963/39.

PROCESS OF DIMINISHING or preventing foaming.—I. G. Farbenindustrie. March 25, 1938. 9061/39.

METHOD OF STABILISING ALKALI METAL ALCOHOLATES and alcoholic solutions of alcoholates and hydroxides.—Mathieson Alkali-Werke. March 26, 1938. 9302/39.

GASEOUS CEMENTATION.—L. Renault. March 30, 1938. 9361/39.

PROCESS FOR THE MANUFACTURE OF CONVERSION PRODUCTS OF HIGH MOLECULAR CARBOHYDRATES of the starch group.—I. G. Farbenindustrie. March 26, 1938. 9420/39.

MANUFACTURE OF 4-AMINOBENZENE-SULPHONAMIDE.—I. G. Farbenindustrie. March 25, 1938. 9421/39.

PROCESSES FOR THE POLYMERISATION OF OLEFINES.—G. Natta, and M. Baccaredda. March 26, 1938. 9431/39.

PROCESS FOR PREPARING POLYMERISATES OF FORMALDEHYDE.—Gutehoffnungshutte Oberhausen, A.-G. March 26, 1938. 9535/39.

MANUFACTURE OF BASIC DYESTUFFS of triarylmethane series.—I. G. Farbenindustrie. March 28, 1938. 9700/39.

Specifications Accepted with Date of Application

MANUFACTURE OF AZO DYESTUFFS and intermediate products.—Soc. of Chemical Industry in Basle. Feb. 10, 1937. 513,109.

RESINOUS POLYSTYRENE suitable for moulding.—Bakelite, Ltd. May 18, 1937. 513,256.

COMPOSITIONS COMPRISING SILICON CARBIDE.—W. J. Tennant (Carborundum Co.). March 7, 1938. 513,265.

MANUFACTURE OF POLYVINYL RESINS.—Kodak, Ltd. March 5, 1937. 513,266.

CYCLOPENTANO-DIMETHYLPOLYHYDRO-PHENANTHRENE CARBOXYLIC ACIDS and derivatives thereof.—Naamlooze Vennootschap Organon. March 17, 1937. 513,060.

MANUFACTURE OF SYNTHETIC RUBBER-LIKE MATERIALS.—I. G. Farbenindustrie. March 20, 1937. 513,116.

MANUFACTURE OF POLYVINYL ACETAL RESINS.—Kodak, Ltd. (Eastman Kodak Co.). March 22, 1938. 513,117, 513,118, 513,119.

MANUFACTURE OF LUBRICATING OILS from olefines.—Standard Oil Development Co. Dec. 7, 1937. 513,169.

PURIFICATION OF ACETYLENE prepared by thermal or electrical methods.—I. G. Farbenindustrie and G. W. Johnson. March 28, 1938. 513,209.

PHOTOGRAPHIC EMULSIONS sensitised with cyanine dyes, and the manufacture of dyes therefor.—Kodak, Ltd. March 29, 1937. 513,170.

METHOD OF AND APPARATUS FOR THE TREATMENT of metallic bodies by oxidising gas.—Linde Air Products Co. April 24, 1937. 513,069.

MANUFACTURE OF DISPERSIONS OR EMULSIONS.—W. W. Groves (I. G. Farbenindustrie). March 30, 1938. 513,076.

STRIPPING OF DYESTUFFS from textile and other materials.—R. W. Moncrieff. March 30, 1938. 513,077.

MANUFACTURE OF POLYMERIC ALLYL ESTERS.—American Cyanamid Co. April 1, 1937. 513,221.

PRODUCTION OF ALIPHATIC ACIDS.—H. Dreyfus, and W. H. Groombridge. April 1, 1938. 513,226.

MANUFACTURE OF METALLIFEROUS AZO-DYESTUFFS.—Soc. of Chemical Industry in Basle. April 3, 1937. (Cognate Application, 10245/38.) 513,233.

MANUFACTURE OF CARBON TETRACHLORIDE.—I. G. Farbenindustrie. May 10, 1937. 513,235.

PROCESS FOR THE MANUFACTURE OF PURE 4-AMINO-BENZENE-SULPHONAMIDE.—I. G. Farbenindustrie. April 3, 1937. (Addition to 480,059.) 513,242.

MANUFACTURE OF ESTERS of methacrylic acid.—E. I. du Pont de Nemours and Co. April 3, 1937. 513,243.

MANUFACTURE OF A VAT DYESTUFF.—E. I. du Pont de Nemours and Co. April 5, 1937. 513,281.

PROCESS FOR THE MANUFACTURE OF PRODUCTS FROM POLYVINYL COMPOUNDS.—Siemens-Schuckertwerke, A.-G., and J. T. Shevlin. April 1, 1938. (Divided out of and Addition to 497,001.) 513,296.

METHOD OF CONTROLLING JELLING PROPERTIES OF PECTIN, and the product resulting therefrom.—Mutual Citrus Products Co. May 2, 1938. 513,298.

Amended Specification Published

MANUFACTURE OF 2-ALKYLTETRAHYDROBENZSELENAZOLES.—I. G. Farbenindustrie. 497,659.

Weekly Prices of British Chemical Products

TRADING conditions in the market for industrial chemicals have shown very little material change during the past week there being a continuance of steady activity throughout most sections. The price position remains very firm and in some directions scarcity of supplies has lead to sharp rises in quotations. The controlled maximum prices for lithopone have ceased to operate and the maximum quotation for zinc oxide, red seal, has been raised to £21 per ton. Business in coal tar products remains steady with supplies for some articles a little difficult to negotiate. Quotations are mostly unchanged at recent levels.

MANCHESTER.—Steady to firm price conditions continue to obtain pretty well throughout the range of heavy chemicals on the Manchester market. In most directions the movement into consumption against contracts is on a fair scale, with textile bleaching and finishing products attracting better attention. So far as fresh business is concerned, a moderate inquiry has been reported during the past week. In the tar products section pitch seems to be attracting more attention from the Continent and values are firmer, whilst stronger conditions are also reported in respect of crude carbolic and the benzoles.

GLASGOW.—Conditions in the Scottish heavy chemical market remain steady. Prices are firm and no slackening of demand has been experienced. Oxalic acid and tartaric acid are difficult to obtain, but it is hoped the position in these will improve when import licences are granted.

Price Changes

Rises: Copper Sulphate (Manchester); Cream of Tartar; Zinc Oxide, red seal; Lithopone; Benzol, pure (Manchester); Pitch (Manchester).

*In the case of certain products, here marked with an asterisk, the market is nominal, and the last ascertainable prices have been included.

†Coal Tar Products: The position with regard to prices of benzol, naphtha, pitch, toluol and xylol is still fluid, owing to possibilities of control.

General Chemicals

ACETIC ACID.—Maximum prices per ton: 40% technical, 1 ton or over, £15 12s.; 10 cwt. and less than 1 ton, £16 12s.; 4 cwt. and less than 10 cwt., £17 12s.; 80% technical, 1 ton, £29 5s.; 10 cwt./1 ton, £30 5s.; 4/10 cwt., £31 5s.; 80% pure, 1 ton, £31 5s.; 10 cwt./1 ton, £32 5s.; 4/10 cwt., £33 5s.; commercial glacial, 1 ton, £37; 10 cwt./1 ton £38; 4/10 cwt., £29; delivered buyers' premises in returnable barrels.

ACETONE.—Maximum prices per ton, 50 tons and over, £39; 10/50 tons, £39 10s.; 5/10 tons, £40; 1/5 tons, £40 10s.; single drums, £41 10s., delivered buyers' premises in returnable drums or other containers having a capacity of not less than 45 gallons each; delivered in containers of less than 45 gallons but not less than 10 gallons £10 10s. per ton in excess of maximum prices; delivered in containers less than 10 gallons each £10 10s. per ton in excess of maximum prices, plus a reasonable allowance.

*ALUM.—Loose lump, £8 7s. 6d. per ton d/d.

*ALUMINIUM SULPHATE.—£7 5s. 0d. per ton d/d Lancs.

AMMONIA, ANHYDROUS.—99.95%, 1s. to 2s. per lb. according to quantity in loaned cylinders, carriage paid; less for important contracts.

AMMONIUM CARBONATE.—£20 per ton d/d in 5 cwt. casks.

AMMONIUM CHLORIDE.—Grey galvanising £21 per ton, in casks, ex wharf. See also Salammoniac.

AMMONIUM DICHROMATE.—1s. per lb. d/d U.K.

*ANTIMONY OXIDE.—£68 per ton.

ARSENIC.—Prices nominal, f.o.b. Antwerp, subject to works acceptance.

BARIUM CHLORIDE.—Market nominal.

BLEACHING POWDER.—Spot, 35/37% £9 5s. per ton in casks, special terms for contract.

BORAX COMMERCIAL.—Granulated, £18 per ton; crystal, £19; powdered, £19 10s.; extra finely powdered, £20 10s.; B.P. crystals, £27; powdered, £27 10s.; extra fine, £28 10s. per ton, in free 1-cwt. bags, carriage paid in Great Britain. Borax Glass, lump, £60; powder, £61; in tin-lined cases for home trade only, packages free, carriage paid in Great Britain.

BORIC ACID.—Commercial granulated, £32 per ton; crystal, £33; powdered, £34; extra finely powdered, £36; large flakes, £44 10s.; B.P. crystals, £41; powdered, £42; extra fine powdered, £44 per ton for ton lots, in free 1-cwt. bags, carriage paid in Great Britain.

CALCIUM BISULPHITE.—£7 5s. per ton f.o.r. London.

*CALCIUM CHLORIDE.—GLASGOW: 70/75% solid, £5 12s. 6d. per ton ex store.

CHARCOAL LUMP.—£7 5s. to £11 per ton, ex wharf. Granulated £7 to £9 per ton according to grade and locality.

*CHLORINE, LIQUID.—£18 15s. per ton, seller's tank wagons, carriage paid to buyer's sidings; £19 5s. per ton, d/d in 16/17 cwt. drums (3-drum lots); £19 10s. per ton d/d in 10-cwt. drums (4-drum lots); 4¾d. per lb. d/d station in single 70-lb. cylinders.

*CHROMETAN.—Crystals, 3d. per lb.; liquor, £13 per ton d/d station in drums.

CHROMIC ACID.—10¾d. per lb., less 2½%; d/d U.K.

*CHROMIC OXIDE.—11¾d. per lb.; d/d U.K.

CITRIC ACID.— 1s 1d. per lb. MANCHESTER: 1s. 1¼d..

COPPER SULPHATE.—MANCHESTER: £24 per ton f.o.b.

CREAM OF TARTAR.—100%, £5 2s. to £5 7s. per cwt., less 2½%.

FORMALDEHYDE.—40% by volume, £25 to £27 per ton, according to quantity, in casks, ex store.

FORMIC ACID.—85%, £42 per ton for ton lots, ex store, in cylinders; smaller parcels quoted at 45s. 6d. to 47s. 6d. per cwt., ex store.

GLYCERINE.—Chemically pure, double distilled, 1.260 s.g., in tins, £3 10s. to £4 10s. per cwt. according to quantity; in drums, £3 2s. 6d. to £3 16s. 0d. Refined pale straw industrial, 5s. per cwt. less than chemically pure.

HEXAMINE.—Technical grade for commercial purposes, 1s. 4d. per lb.; free-running crystals are quoted at 1s. 7d. per lb.; carriage paid for bulk lots.

HYDROCHLORIC ACID.—Spot, 5s. 6d. to 8s. carboy d/d according to purity, strength and locality.

IODINE.—Resublimed B.P., 11s. 2d. per lb. in 7 lb. lots.

*LACTIC ACID.—(Not less than ton lots). Dark tech., 50% by vol., £24 10s. per ton; 50% by weight, £28 10s.; 80% by weight, £50; pale tech., 50% by vol., £28; 50% by weight, £33; 80% by weight, £55; edible, 50%, by vol., £41. One ton lots ex works, barrels free.

LEAD ACETATE.—LONDON: White, £48 to £50, ton lots. MANCHESTER: Market nominal. GLASGOW: Market nominal.

LEAD NITRATE.—About £40 per ton in casks.

LEAD, RED.—English, 5/10 cwt., £35; 10 cwt. to 1 ton, £34 15s.; 1/2 tons, £34 10s.; 2/5 tons, £34; 5/20 tons, £33 10s.; 20/100 tons, £33; over 100 tons, £32 10s. per ton, less 2½ per cent. carriage paid; non-setting red lead, 10s. per ton dearer in each case; Continental material, £1 per ton cheaper.

LEAD, WHITE.—Dry English, less than 5 tons, £45; 5/15 tons, £41; 15/25 tons, £40 10s.; 25/50 tons, £40; 50/200 tons, £39 10s. per ton, less 5% carriage paid; Continental material £1 per ton cheaper. Ground in oil, English, 1/5 cwt., £53; 5/10 cwt., £52; 10 cwt. to 1 ton, £51 10s.; 1/2 tons, £50; 2/5 tons, £49; 5/10 tons, £47; 10/15 tons, £46; 15/25 tons, £45 10s.; 25/50 tons, £45; 50/100 tons, £44 10s. per ton, less 5% carriage paid. Continental material £2 per ton cheaper.

LITHARGE.—10 cwt.-1 ton, £34 15s. per ton.

MAGNESITE.—Calcined, in bags, ex works, about £9 to £10 per ton.

MAGNESIUM CHLORIDE.—Solid (ex wharf), £10 per ton.

*MAGNESIUM SULPHATE.—Commercial, £5 10s. per ton, ex wharf.

MERCURY PRODUCTS.—Controlled prices for 1 cwt. quantities: Bichloride powder, 6s. 4d.; bichloride (industrial users), 6s. 4d.; bichloride lump, 6s. 11d.; bichloride ammon. powder, 7s. 10d.; bichloride ammon. lump, 7s. 8d.; mercurous chloride, 7s. 8d. mercury oxide, red cryst., B.P., 9s.; red levig. B.P., 8s. 6d.; yellow levig. B.P., 8s. 4d.

*METHYLATED SPIRIT.—61 O.P. industrial, 1s. 5d. to 2s per gal.; pyridinised industrial, 1s. 7d. to 2s. 2d.; mineralised, 2s. 6d. to 3s. Spirit 64 O.P. is 1d more in all cases and the range of prices is according to quantities.

*NITRIC ACID.—Spot, £25 to £30 per ton, according to strength, quantity and destination.

OXALIC ACID.—£48 5s. per ton for ton lots, ex wharf, in casks, smaller parcels, 53s. to 57s. per cwt., ex store; deliveries slow.

*PARAFFIN WAX.—GLASGOW: 3¾d per lb.

POTASH, CAUSTIC.—Market nominal. MANCHESTER: £47 per ton.

POTASSIUM CHLORATE.—Imported powder and crystals, ex store London, 10d. to 1s. per lb.

*POTASSIUM DICHROMATE —5¼d. per lb. carriage paid. GLASGOW 5¼d. per lb., net, carriage paid.

POTASSIUM CHROMATE.—2s. per lb. d/d U.K.

POTASSIUM IODIDE.—B.P., 9s. 10½d. per lb. in 7 lb. lots; for not less than 1 cwt., 7s. 9d. per lb.
POTASSIUM NITRATE.—Small granular crystals, £26 to £29 per ton ex store, according to quantity.
POTASSIUM PERMANGANATE.—Commercial, about 10¾d. per lb., delivered.
POTASSIUM PRUSSIATE.—Yellow, market nominal, supplies scarce.
SALAMMONIAC.—Dog-tooth crystals, £40 per ton; medium, £39; fine white crystals, £20; in casks, ex store.
SALT CAKE.—Unground, spot, £3 15s. per ton.
SODA ASH.—Light 98/100%, £5 17s. 6d. per ton f.o.r. in bags.
SODA, CAUSTIC.—Solid, 76/77° spot, £13 10s. per ton d/d station.
SODA CRYSTALS.—Spot, £5 to £5 5s. per ton d/d station or ex depot in 2-cwt. bags.
SODIUM ACETATE.—£25 to £26 per ton, ex wharf.
SODIUM BICARBONATE.—About £10 10s. per ton, in bags.
SODIUM BISULPHITE POWDER.—60/62%. £12 10s. to £14 per ton d/d in 2-ton lots for home trade.
SODIUM CARBONATE MONOHYDRATE.—£20 per ton d/d in minimum ton lots in 2 cwt. free bags.
SODIUM CHLORATE.—£27 10s. to £32 per ton, d/d according to quantity.
*SODIUM DICHROMATE.—Crystals cake and powder 4½d. per lb net d/d U.K. with rebates for contracts. GLASGOW: 4¼d. per lb., carriage paid.
*SODIUM CHROMATE.—5d. per lb. d/d U.K.
SODIUM HYPOSULPHITE.—Pea crystals, £15 15s. per ton for 2-ton lots; commercial, £11 15s. per ton. MANCHESTER: Commercial, £11; photographic, £15 10s.
*SODIUM METASILICATE.—£14 5s. per ton, d/d U.K. in cwt. bags.
SODIUM NITRATE.—Refined, £8 5s. per ton for 6-ton lots d/d.
SODIUM NITRITE.—£18 5s. per ton for ton lots.
SODIUM PERBORATE.—10%, £4 per cwt. d/d in 1-cwt. drums.
SODIUM PHOSPHATE.—Di-sodium, £16 to £17 per ton delivered for ton lots. Tri-sodium, £18 10s. per ton delivered per ton lots.
SODIUM PRUSSIATE.—4¼d. to 5¼d. per lb.
SODIUM SILICATE.—£8 2s. 6d. per ton.
*SODIUM SULPHATE (GLAUBER SALTS).—£3 per ton d/d.
*SODIUM SULPHATE (SALT CAKE).—Unground spot, £3 to £3 10s. per ton d/d station in bulk. MANCHESTER: £3 15s.
SODIUM SULPHIDE.—Solid 60/62%, Spot, £11 15s. per ton d/d in drums; crystals, 30/32%, £9 per ton d/d in casks. MANCHESTER: Concentrated solid, 60/62%, £11; commercial, £8 10s.
*SODIUM SULPHITE.—Pea crystals, spot, £14 10s. per ton d/d station in kegs.
*SULPHUR PRECIP.—B.P., £55 to £60 per ton according to quantity. Commercial, £50 to £55.
SULPHURIC ACID.—168° Tw., £4 11s. to £5 1s. per ton; 140° Tw., arsenic-free, £3 to £3 10s.; 140° Tw., arsenious, £2 10s.
TARTARIC ACID.—1s. 2d. per lb. less 5%, carriage paid for lots of 5 cwt. and upwards. MANCHESTER: 1s. 2d. per lb.
ZINC OXIDE.—Maximum prices: White seal, £23 10s. per ton; red seal, £21 d/d; green seal, £22 10s. d/d buyers' premises.
*ZINC SULPHATE.—Tech., £11 10s. f.o.r., in 2-cwt. bags.

Rubber Chemicals

ANTIMONY SULPHIDE.—Golden, 8d. to 1s. 4d. per lb., according to quality. Crimson, 1s. 8½d. to 1s. 9½d. per lb.
ARSENIC SULPHIDE.—Yellow, 1s. 6d. to 1s. 8d. per lb.
CARBON DISULPHIDE.—£38 to £41 per ton, according to quantity, drums extra.
CARBON TETRACHLORIDE.—£48 to £53 per ton, according to quantity, drums extra.
CHROMIUM OXIDE.—Green, 1s. 3d. per lb.
INDIA-RUBBER SUBSTITUTES.—White, 4½d. to 5d. per lb.; dark 3¾d. to 4¾d. per lb.
LITHOPONE.—30%, £16 15s. per ton.
SULPHUR CHLORIDE.—6d. to 8d. per lb., according to quantity.
VEGETABLE BLACK.—£35 per ton upwards; 28/30%, £15 10s. 0d.; 60%, £29, delivered buyers' premises.
ZINC SULPHIDE.—£56 per ton ex works.

Plus 5% War Charge.

Nitrogen Fertilisers

AMMONIUM SULPHATE.—The following prices have been announced for neutral quality basis 20.6% nitrogen, in 6-ton lots delivered farmer's nearest station up to June 30, 1940; September, £7 5s.; October, £7 6s. 6d.; November, £7 8s.; December, £7 9s. 6d.; January, 1940; £7 11s., February £7 12s. 6d.; March/June, £7 14s.
CALCIUM CYANAMIDE.—The following prices are for delivery in 5-ton lots, carriage paid to any railway station in Great Britain up to June 30, 1940; September £8 2s. 6d.; October £8 3s. 9d.; November £8 5s.; December, £8 6s. 3d.; January, 1940, £8 7s. 6d.; February £8 8s. 9d.; March £8 10s.; April/June, £8 11s. 3d.
NITRO-CHALK.—£7 10s. 6d. per ton up to June 30, 1940.
SODIUM NITRATE.—£8 5s. per ton for delivery up to June 30, 1940
CONCENTRATED COMPLETE FERTILISERS.—£11 4s. to £11 13s. per ton in 6-ton lots to farmer's nearest station.
AMMONIUM PHOSPHATE FERTILISERS.—£10 19s. 6d. to £14 16s. 6d per ton in 6-ton lots to farmer's nearest station.

Coal Tar Products

†BENZOL.—At works, crude, about 1s. 0¾d. per gal.; standard motor, 1s. 6½d. to 1s. 7d.; 90's, 1s. 4½d. to 1s. 5d.; pure, 1s. 8½d. to 1s. 9d. MANCHESTER: Crude, 1s. 0½d. to 1s. 1d. per gal.; pure, 1s. 10½d. per gal.
CARBOLIC ACID.—Crystals, 9d. per lb.; Crude, 60's, 3s. to 3s. 3d. according to specification. MANCHESTER: Crystals, 8½d. to 9d. per lb., d/d; crude, 2s. 8d. to 3s. naked, at works.
CREOSOTE.—Home trade, from 4d. per gal., f.o.r., makers' works; exports 6d. to 6¼d. per gal., according to grade. MANCHESTER: 4d. to 5½d.
CRESYLIC ACID.—98/100%, 2s. 6d. to 2s. 9d. per gal., according to specification. MANCHESTER: Pale, 99/100%, 2s. 10d.
†NAPHTHA.—Solvent, 90/160°, 1s. 6d. to 1s. 7d. per gal.; solvent, 95/160°, 1s. 7d. to 1s. 8d., naked at works; heavy 90/190°, 1s. 1½d. to 1s. 3d. per gal., naked at works, according to quantity. MANCHESTER: 90/160° 1s. 6d. to 1s. 8d. per gal.
NAPHTHALENE.—Crude, whizzed or hot pressed, £6 to £6 10s. per ton; purified crystals, £9 per ton in 2-cwt. bags. LONDON: Fire lighter quality, £3 to £4 10s. per ton. MANCHESTER: Refined, £17.
†PITCH.—Medium, soft, 35s. per ton, f.o.b. MANCHESTER: 32s. 6d. f.o.b. East Coast.
PYRIDINE.—90/140%, 17s. 6d. per gal.; 90/160%, 15s.; 90/180%, 3s. to 4s. per gal. f.o.b. MANCHESTER: 14s. to 17s. per gallon.
†TOLUOL.—90%, 2s. 1d. to 2s. 2d. per gal.; pure, 2s. 6d. to 2s. 7d. MANCHESTER: Pure, 2s. 7d. per gallon, naked.
†XYLOL.—Commercial, 2s. 3d. per gal.; pure, 2s. 5d. MANCHESTER: 2s. 6d. per gallon.

Wood Distillation Products

CALCIUM ACETATE.—Brown, £7 5s. to £8 per ton; grey, £9 to £11. MANCHESTER: Grey, £14.
METHYL ACETONE.—40.50%, £35 to £38 per ton.
WOOD CREOSOTE.—Unrefined, 8d. to 1s. per gal., according to boiling range.
WOOD NAPHTHA, MISCIBLE.—3s. 3d. to 3s. 8d. per gal.; solvent, 3s. 4d. to 3s. 9d. per gal.
WOOD TAR.—£3 to £8 per ton, according to quality.

Intermediates and Dyes

ANILINE OIL.—Spot, 8d. per lb., drums extra, d/d buyer's works.
ANILINE SALTS.—Spot, 8d. per lb. d/d buyer's works, casks free.
BENZALDEHYDE.—1s. 10d. per lb., for cwt. lots, net packages.
BENZIDINE, HCl.—2s. 7d. per lb., 100% as base, in casks.
BENZOIC ACID, 1914 B.P. (ex toluol).—1s. 11d. per lb. d/d buyer's works.
m-CRESOL 98/100%.—1s. 8d. to 1s. 9d. per lb. in ton lots.
o-CRESOL 30/31° C.—6½d. to 7½d. per lb. in 1-ton lots.
p-CRESOL 34/35° C.— 1s. 7d. to 1s. 8d. per lb. in ton lots.
DICHLORANILINE.—2s. 1½d. to 2s 5½d. per lb.
DIMETHYLANILINE.—Spot, 1s. 7½d. per lb., package extra.
DINITROBENZENE.—7½d. per lb.
DINITROCHLORBENZENE, SOLID.—£79 5s. per ton.
DINITROTOLUENE.—48/50° C., 8½d. per lb.; 66/68° C., 11d.
DIPHENYLAMINE.—Spot, 2s. 3d. per lb.; d/d buyer's works.
GAMMA ACID, Spot, 4s. 4½d. per lb. 100%, d/d buyer's works.
H ACID.—Spot. 2s. 7d. per lb.; 100%, d/d buyer's works.
NAPHTHIONIC ACID.—1s. 10d. per lb.
β-NAPHTHOL.—£97 per ton; flake, £94 8s. per ton.
α-NAPHTHYLAMINE.—Lumps, 1s. 1d. per lb.
β-NAPHTHYLAMINE.—Spot, 3s. per lb.; d/d buyer's works.
NEVILLE AND WINTHER'S ACID.—Spot, 3s. 3½d. per lb. 100%.
o-NITRANILINE.—4s. 3½d. per lb.
m-NITRANILINE.—Spot, 2s. 10d. per lb. d/d buyer's works.
p-NITRANILINE.—Spot, 1s. 10d. to 1s. 11d. per lb. d/d buyer's works.
NITROBENZENE.—Spot, 4½d. to 5d. per lb., in 90-gal. drums, drums extra, 1-ton lots d/d buyer's works.
NITRONAPHTHALENE.—9½d. per lb.; P.G., 1s. 0½d. per lb.
SODIUM NAPHTHIONATE.—Spot, 1s. 11d. per lb.; 100% d/d buyer's works.
SULPHANILIC ACID.—Spot, 8¾d. per lb. 100%, d/d buyer's works.
o-TOLUIDINE.—10½d. per lb., in 8/10 cwt. drums, drums extra.
p-TOLUIDINE.—1s. 10½d. per lb., in casks.
m-XYLIDINE ACETATE.—4s. 3d. per lb., 100%.

Latest Oil Prices

LONDON, Nov. 1.—To November 25 (per ton, net naked, ex mill, works, or refinery, subject to additions according to package): LINSEED OIL, raw, £36. RAPE OIL, crude, £44 5s. COTTON SEED OIL, crude, £26; washed, £28 15s.; refined edible, £29 12s. 6d; refined deodorised, £30 10s. SOYA BEAN OIL, crude, £27; refined deodorised, £31. GROUNDNUT OIL, crude, £29 10s.; refined deodorised, £34; refined hardened, £38. COCONUT OIL, crude, £22 2s. 6d.; refined deodorised, £25 7s. 6d.; hardened, £29 17s. 6d. PALM OIL, refined deodorised, £27. PALM KERNEL, crude, £21 10s.; refined deodorised, £24 15s.; refined hardened, £26 5s. WHALE OIL, £24 10s. to £27 10s. ACID OILS.—Groundnut oil, £16; soya bean oil, £15; coconut and palm kernel oils, £18 10s. ROSIN, 27s. 6d. to 31s. per cwt., according to grade. TURPENTINE, unchanged at 57s. per cwt., spot, American, including tax, ex wharf, barrels and ex discount.

New Companies Registered

Northern Fertilisers, Ltd. (21,211).—Private company. Capital: £100 in 100 ordinary shares of £1 each. To carry on the business of manufacturers and distributors of and dealers in all kinds of manures, lime, fertilisers and fertilising agents, etc. Directors: Edward Beattie, 5 Huntly Avenue, Giffnock; William Neill. Registered office: 12 Langshot Street, Ibrox, Glasgow.

John Low, Ltd. (357,337).—Private company. Capital: £1,800 in 1,800 shares of £1 each. To carry on business as wholesale and retail chemists, druggists, drysalters, oil and colourmen, etc. The permanent directors are: Wm. Low; Jessie M. Low; George Low. Secretary: Jessie M. Low. Solicitors: Geo. W. Hodgson & Angus, Stanhope, Co. Durham. Registered office: The Pharmacy, Blackhill, Co. Durham.

C. L. Burdick Manufacturing Co., Ltd. (357,260).—Private company. Capital: £10,000 in 10,000 ordinary shares of £1 each. To carry on the business of scientific instrument makers, general, electrical and mechanical engineers, iron, steel and metal merchants, manufacturing chemists, etc. Directors: Charles L. Burdick; John H. Burgess; John Perrin. Registered office: Stevenage House, 10/44 Holborn Viaduct, E.C.1.

Manchester Grit Company, Ltd. (357,105).—Private company. Capital £500 in £1 shares. To carry on the business of manufacturers of and dealers in flintgrit, cockle shell, oyster shell, bird sand, parrot food and cattle and poultry food and feeding and fattening preparations, artificial manures and fertilisers, etc. Subscribers: Fdk. H. Bovey, 51 Sutton Road, Muswell Hill, N.10; Richard W. Gardner. Solicitors: Joynson-Hicks and Co., Lennox House, Norfolk Street, W.C.2.

London Fertilizer Company, Ltd. (356,818).—Private company. Capital, £100 in 100 shares of £1 each. To carry on business as manufacturers of and wholesale and retail dealers in manures and fertilisers of every description, etc. The directors are: Edward H. Cowell, The Hermitage, 10 West Place, Wimbledon Common, S.W.19; Ronald G. Cowell, Eric W. Upton. Solicitors: Deacon and Co., 29 Great St. Helens, E.C.3. Registered office: Ocean House, 24 and 25 Great Tower Street, E.C.3.

Lisle Munday and Company, Ltd. (357,170.)—Private company. Nominal capital £50,000 in 50,000 ordinary shares of £1 each. To adopt an agreement with E. A. Coffee, to carry on the business of paint, colour and varnish manufacturers, formerly carried on by him as "Lisle Munday and Co.," at 162 and 164 Priory Road, and 46, 47, 48 and 49 Orchard Lane, Southampton. Directors: Edmund A. Coffee, "Savona," Bassett Crescent East Bassett, Southampton; Fredk. K. Hussey, Harold P. Taylor, Robert Donald D. Orwin, Thomas B. Scully. Secretary: Dorothy C. Hogg. Solicitor: T. R. Plumer Price, Southampton. The registered office is at 164 Priory Road, St. Denys, Southampton.

British Katadyn, Ltd. (357,125).—Private company. Capital £100 in 100 shares of £1 each. To carry on the business of engineers and contractors for the supply of apparatus for filtering and purifying water and other liquids, whether by electrical, chemical or other means, etc. Subscribers: Emlyn Smith, 10 Norfolk Street, Strand, W.C.2; Doris E. Nixon. Solicitors: Swan Hardman & Co., 10 Norfolk Street, W.C.2. Registered office: 10 Norfolk Street, W.C.2.

London Metal and Ore Co., Ltd. 357,104.—Private company. Capital £100 in 100 shares of £1 each. To carry on the business of metal merchants, brokers of and dealers in metals and metallic substances, ores, residues, and the products thereof, chemicals, fertilisers and ferro-alloys, etc. Subscribers: Bernard Civval, 520 Kenton Lane, Harrow Weald, Middlesex; Ronald G. Moore. Secretary: Bernard Civval,

A. W. Golightly, Ltd. (357,255).—Private company. Capital: £1,500 in 1,500 shares of £1 each. To carry on the business of manufacturers of and dealers in chemicals, gases, drugs, medicines, plastics, disinfectants, fertilisers, salts, acids, oils, colours, glues, gums, pigments, varnishes, brushes, etc. The directors are: Mrs. Margaret A. Golightly; Charles B. Young. Solicitor: Ralph W. T. Lubbock, Andersons Buildings, New Market Street, Newcastle-on-Tyne. Registered office: 95 and 97 Park View, Whitley Bay.

Four-Cide Distributors (Folkestone), Ltd. (356,777).—Private company. Capital, £1,000 in 1,000 shares of £1 each. To carry on the business of agents for the sale and distribution of and manufacturers of and dealers in distinfectants, insecticides, germicides, fungicides and fumigating and disinfecting preparations, chemicals, etc. Directors: Phyllis E. Stevens, John F. Stokes, 7 Wear Bay Road, Folkestone, Geoffrey H. Hayward. Solicitors: Atkinson and Stainer, Folkestone.

Hygienic Laboratories, Ltd.—Private company. Capital, £1,000 in £1 shares. To carry on business as manufacturers of and wholesale and retail dealers in liquid wax, floor polish, chemicals, gases and disinfectants, etc. Subscribers (each with one share): Eric Woodhead, 16 Broad Lane, Dalton, Huddersfield; Dorothy Pearson. So long as Associated Manufacturers (Manchester), Ltd., hold not less than 70 per cent. of the issued shares they may appoint three directors. The first directors are to be appointed by the subscribers.

Lodge Robin & Hersom, Ltd. (356,768).—Private company. Capital, £5,000 in 5,000 shares of £1 each. To carry on the business of importers, exporters and distillers of and dealers in drugs, chemicals and essential oils, etc. Directors: Eric E. Lodge, 110 High Street, Hampton Hill, Middlesex; Stanley H. Robin, Albert G. Hersom, Frederick Eggar. Secretary: Albert G. Hersom. Solicitors: Fortescue Adshead and Guest, Maxwell House, Arundel Street, W.C.2. Registered office: 11-12 Fenchurch Street, E.C.3.

Chemical and Allied Stocks and Shares

THE general undertone on the Stock Exchange has continued to be governed by the trend in gilt-edged stocks, and following last week's strong upward movement, the latter came in for a moderate amount of profit-taking which resulted in slightly lower prices. Nevertheless, the prevailing market view is that the rise in Government securities is likely to be resumed, and in some quarters there is talk of a further reduction in the Bank rate to 1½ per cent. or possibly 1 per cent. Most shares of chemical and kindred companies reflected the easier tendency on the Stock Exchange, but last week's gains were partly held.

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Although Imperial Chemical ordinary units were slightly lower at 29s. 4½d. the preference units have improved from 29s. 3d. to 30s. 3d. In a number of other cases shares of the preference class were also better, and Monsanto Chemicals 5½ per cent. preference at 21s. 5d. showed a rise of 1s. 3d. B. Laporte were unaffected by the interim dividend, and remained tightly held with a quotation of 56s. 3d. "middle", while Fison Packard at around 36s. were also unchanged on balance. Lever and Unilever improved from 29s. 9d. to 31s., and gains were also shown in the company's preference units, sentiment being influenced by hopes that the interim payment on the ordinary may be maintained. Distillers at 64s. lost part of last week's rise and were less active, while United Molasses were lower at 25s. awaiting the results which fall to be issued in a few weeks. British Oxygen, British Aluminium, Turner and Newall, and various other widely-held shares were moderately lower in sympathy with the general market tendency.

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Imperial Smelting were 6d. better at 11s. 9d. and a small rise to 16s. 3d. was shown by Swedish Match, while British Match were 32s. 6d., compared with 31s. 6d. a week ago. Barry and Staines, aided by the interim dividend, improved from 25s. to 25s. 7½d., but a lower price ruled for Michael Nairn. Borax Consolidated went back from 26s. 10½d. to 25s. 9d. Among iron, steel and allied shares those of companies with colliery interests were favoured, and Stanton were 46s. 3d., while Staveley were better at 43s. 9d. Guest Keen were around 21s. 9d. and Dorman Long 22s. 6d., but Consett declined to 6s. 9d. Babcock and Wilcox had a steady appearance at 39s. 6d. and Pressed Steel were firm at 15s. Associated Cement subsequently showed an easier tendency at 68s. 1½d. but awaiting the interim dividend decision. British Plaster Board were firmer at 24s. 3d. Pinchin Johnson failed to keep best prices touched in the past few days, but on balance showed improvement from 20s. 9d. to 22s. 3d., and a higher price was made by Lewis Berger. Wall Paper Manufacturers' deferred units were inclined to be reactionary in advance of the dividend announcement. Cerebos and Reckitt and Sons ordinary shares were relatively steady features. Sanitas Trust 10s. ordinary were quoted at the higher price of 15s. xd, while among lower-priced shares British Industrial Plastics were better at 1s. 7½d. Bradford Dyers, Bleachers and other textile shares were less active, but were fairly well maintained in price, although Courtaulds reacted, and a moderate decline was shown in British Celanese ordinary. The second preference shares of the last-named company also lost part of their recent improvement.

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Boots Drug were reactionary and changed hands around 41s. 6d. Timothy Whites were 19s. 6d. and Sangers were also quoted at the latter figure. Beechams Pills 2s. 6d. deferred shares were steady at 7s. 3d. British Oil and Cake Mills preferred ordinary were unchanged at 36s. 3d., while United Premier Oil and Cake at 7s. 3d. were virtually the same as a week ago. There was little activity in General Refractories, which, however, held their recent improvement to 8s. 6d. Demand was reported for Birmid Industries, and the price improved 2s. 6d. to 51s. 3d.

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Oil shares tended to attract a fair amount of attention, and Trinidad Leaseholds rallied from 82s. 6d. to 87s. 6d. "Shell" were 85s. 7½d. compared with 84s. 4½d. a week ago, while Anglo-Iranian were 1s. 3d. better at 62s. 6d., although best prices touched during the past few days were not held.